JMSCR Vol||04||Issue||01||Page 8937-8940||January 2016

www.jmscr.igmpublication.org

Impact Factor 3.79
Index Copernicus Value: 5.88
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: http://dx.doi.org/10.18535/jmscr/v4i1.25

IGM Publication Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

A Study of Hepatic Involvement in HIV Positive Patients

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INTRODUCTION

Human immunodeficiency virus is probably the only pathogen with diverse sites of affection in human body. Not a single organ system in particular is immune to its effects. Effects are caused either directly by the virus itself or more commonly, by virtue of so called opportunistic infections and malignancies.

It has been estimated that approximately one third of deaths in HIV positive patients are in some way related to liver diseases[(1).] Causes include infections, hepatic injuries and malignancies, which may range from hepatic steatosis to hypersensitivity reactions to immune reconstitution in context of antiretroviral therapy.

HIV can involve the liver directly, as demonstrated by the presence of HIV p24 within Kupffer cells and hepatic endothelial cells and HIV messenger RNA within hepatocytes[(2)]. Hepatic macrophages and endothelial cells express the CD4 surface molecule and have been shown to support viral replication in vitro[(3)]. It remains unclear whether HIV itself directly damages the liver. Liver biopsy will demonstrate diseases involving the liver in about 50% of patients with AIDS and above 25% of patients who are HIV positive, but who are not known to have AIDS.

We undertook a study of the clinical profile of HIV positive patients with hepatic involvement. The biochemical parameters and imaging finding were studied. The hepatic involvement was correlated with CD4 counts and other systemic involvement.

MATERIALS AND METHODS

After obtaining approval from Institutional Ethics Committee, Bharati Hospital, Pune, a total

of 100 consecutive HIV positive patients, both indoor and outdoor, were taken for study and hepatic involvement in these patients was studied. Patients 18 years of age and above diagnosed as HIV positive by Tridot confirmed by ELISA &/or WESTERN BLOT were included in the study group. Patients were examined in detail with high index of suspicion for hepatic involvement as per proforma enclosed including history of drug treatment antiretroviral therapy (ART).Patients were included irrespective of whether receiving ART or not. Detailed history of symptoms of any hepatic involvement was taken along with physical examination done in each patient.

OBSERVATIONS AND RESULTS

Out of 100 HIV positive patients, hepatic involvement was present in 53 (53%). Systemic examination was normal in 59 patients (59%) while abnormal in 41patients (41%). Significant positive correlation was established between liver involvement and abnormal systemic findings.

Age group vs. Liver involvement in HIV positive patients

		Number of cases	Percentage (%)
Age group	≤ 20	1	1.0
	21 - 30	9	9.0
	31 - 40	37	37.0
	41 - 50	26	26.0
	51 - 60	22	22.0
	> 60	5	5.0
Total		**100**	**100.0**

CD4 group vs. liver involvement

		Liver involvement		Total	P-value
		Yes	No		
CD4	≤ 200	28	18	46	0.164
	> 200	25	29	54	
Total		**53**	**47**	**100**	

USG findings in patients with hepatic involvement

Hepatosplenomegaly	12
Ascites	4
Fatty Liver	4
Liver parenchymal disease	6
Cholelithiasis	1
Splenic abscess	3
Liver Hemangioma	2
Hepatomegaly	3
Liver metastasis	1

DISCUSSION

Patients with the acquired immune deficiency syndrome (AIDS) frequently develop hepatic dysfunction. Although hepatic injury may indirectly result from malnutrition, hypotension, administered medications, sepsis, or other conditions, the hepatic injury is frequently due to opportunistic hepatic infection, directly related to AIDS[4]. Liver abnormalities are common in HIV positive patients as a part of generalized process but rarely produce significant liver failure [5]. Chronic liver disease from viral and non-viral hepatitis is recognized as important complication of HIV [6].

100 HIV positive patients were studied for hepatic involvement. Diagnosis all 100 HIV positive patients were done clinically and by investigations. This includes patients without liver involvement. Many patients have multisystem involvement. Out of 100 HIV positive patients, hepatic involvement was present in 53 (53%). Higher number of HIV cases were reported i.e. from 31-40 years 37% followed by 26% in 41-50 years and 22% in 51-60 years. While the higher number of liver involvement was reported 21 patients (31-40 years) followed by 12 patients (51-60 years) and 11 patients (41-50 years).). In a Switzerland HIV Incidence Measurement Survey 2011,HIV prevalence among adult aged 18-49 years was found at 31-32%[7].

31 Males and 22 females presented with liver involvement. Gender wise frequency of HIV infection was noted as 59% in males and 41% in females.

Patient with liver involvement had a mean BMI of 20.23(SD 2.95) Out of 53 cases with liver involvement 28(58.83%) had only transaminases elevated, 8(15.8%) with only abnormal USG findings and 17(32.08 %) with both elevated transaminases and abnormal USG findings.Out of 53 patients with liver involvement USG findings were abnormal in 25 patients. Findings include Hepato-splenomegaly in 12 ,liver parenchymal diseasein 6, ascites in 4, fatty liver 4, splenic abscess in 3, hepatomegaly in 3, liver hemangioma in 2, cholelithiasis in 1 and liver metastasis in 1 patient.

Out of 100 HIV positive patients, on general examination pallor was seen in 50,
icterus in 12, oral candidiasis in 10, clubbing in 2, pedal edema in 2, cervical lymphadenopathy in 2, cyanosis 1 in patient.

Systemic examination was normal in 59 patients (59%) while abnormal in 41patients (41%). Significant positive correlation was established between liver involvement and abnormal systemic findings ($p< 0.001$).

Respiratory system involvement was present as URTI (13), pneumonia (11), Pulmonary tuberculosis (7), pleural effusion (3), bronchiectasis (2). 77 (77%) HIV cases had normal x-ray chest while 23 (23%) had abnormal findings with presence of pneumonia in 11, pulmonary tuberculosis in 7, pleural effusion in 3 and bronchiectasis in 2 patients. CVA (11), toxoplasmosis (4), cryptococcal meningitis (3), TB meningitis (2), CVST (2) and Bell's palsy (1). Only four patients had malignancy in the form of astrocytoma (1), lymphoma (1), CA cervix (1) and liver metastasis (1). Associated infections as viral fever (1), malaria (1), dengue fever (2), acute febrile illness (1) and post-auricular abscess (1) , were also found. Genitourinary involvement was reported as UTI in 9 patients and AKI in 3 patients. A Nigerian study by Samuel et al estimated 26% prevalence of UTI in HIV positive with 15.8 % occurring in males and 32.3% in females [8]. Alimentary /Intraabdominal complaints were more common in form of AGE (21) followed by splenic abscess (3) and ALD (2).

TLC count was low in 13 patients (13%), normal in 70 patients (70%) and high in 17 patients (17%).No significant difference was found in TLC count with or without liver involvement ($p = 0.821$) Platelet count was low in 11 patients (11%), normal in 78 patients (78%) and high in 11 patients (11%). In patients with liver involvement, platelet count was noted low in 7,normal in 37 and high in 9 patients and in those without involvement the count was reported as low in 4,

normal in 41,high in 2(p = 0.077) suggesting significantly difference in low platelet count with and without liver involvement. We found only one patient (1%) HBsAg positive.

CD_4 was ≤ 200 in 28 patients and > 200 in 25 patients with liver involvement.

No statistically significant difference found in CD_4 between with or without liver involvement (p = 0.164). When $CD_4 \leq 100$, 23 patients presented with liver involvement while 9 were without involvement which was statically significant (P value 0.009- Chi-square test). CD4/CD8 mean 0.2, SD 0.16 in patients with liver involvement.

CONCLUSION

The treating physician should be vigilant for these manifestations, so that there can be timely action as regards to antiretroviral therapy and other treatment modalities as needed.

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